



GLOBE EU VIRTUAL EVENT

“NON-ENERGY CARBON SUBSTITUTION”

26 OCTOBER 2021

EVENT REPORT

OVERVIEW

On 26 October, GLOBE EU hosted a virtual event on the topic of “Non-Energy Carbon Substitution”, which brought together 40 participants, including EU policymakers, NGOs, academics, and industry representatives, to discuss the transition of energy intensive industry sectors towards carbon neutrality and circularity.

The 90-minute discussion gave several key players within the chemicals industry the opportunity to present some of the innovative decarbonization projects currently underway in Europe and elsewhere and outline what steps policymakers can take to ensure such projects are further scaled-up. At the same time, experts from academia and NGOs presented their vision of what a truly circular carbon economy would look like, while both MEPs and Commission officials outlined how these visions could be translated into concrete enabling policies.

SPEAKERS

- **Gunter Pauli**, Chairman of the Board, Novamont and Member of The Club of Rome
- **Florian Vernay**, Head of Sustainability & Communications, Home Care Division, Unilever
- **Jonatan Kleimark**, Senior Chemicals and Business Advisor, ChemSec
- **Peter Sandkühler**, Sustainability Director EMEA, Dow
- **Maxine Tillij**, Director Strategic Analysis & Policy, TNO
- **Christian Holzleitner**, Head of Unit, DG CLIMA.C.3 (Land Use and Finance for Innovation)
- **Sirpa Pietikäinen**, MEP and President of GLOBE EU
- Moderated by **Martin Hojsík**, MEP and Vice-President of GLOBE EU

REPLACING FOSSIL-BASED CARBON

Opening the event, Gunter Pauli used part of his keynote address to highlight some of the work that Novamont is doing to find alternative sources of carbon, notably thistles and other weeds, to generate oil feedstock for plastics. With this, he said, Novamont are creating products that are not only competitive, but are also to some extent crowding out petrochemical-based products on the market. Novamont, Mr. Pauli said, is not in the business of bioplastics, but of replenishing carbon into the top soil.

Florian Vernay explained how Unilever, with its Clean Future strategy, is adopting a similar approach when it comes to chemical products; using Renewable and Recycled Carbon (RRC) to reduce reliance on primary fossil carbon. He cited three examples from different continents where such Unilever products are being manufactured. Furthermore, he stated that the manufacturing of RRC products is not an end in itself, but instead a means to achieve carbon neutrality. Therefore, the sourcing of such feedstock must not cause any negative environmental externalities.

Jonathan Kleimark echoed these sentiments, emphasizing that the principal challenge for manufacturers using bio-based solutions is to ensure that the feedstock is responsibly sourced. Achieving this, he said, would require clear transparency on the embedded emissions of all carbon-based feedstock. Such transparency, he believes, would also go a long way to prevent the release of hazardous substances into the environment.

Transparency around carbon is also crucial for the European Commission. Christian Holzleitner stated that any sustainable carbon market would have to track not only the source of carbon, but also the use of it until storage or reuse. While for Martin Hojsík, one of the most important policy steps will be expanding the scope of emissions legislation to cover not only energy, but also materials consumption.

Dow Chemicals have also recognized the importance of creating new business models, as explained by Peter Sandkühler, who highlighted that the company is increasingly replacing fossil-based feedstocks with bio-based whilst ensuring that the sourcing of these materials is neither environmentally detrimental nor hampering food production. However, he believes that there are limits to mechanical recycling since some of the recycled materials can no longer be used in medical equipment or for packaging food products.

The key to achieving this, according to Maxine Tillij from TNO, is much greater cooperation throughout the value chain and ensuring that recycled feedstock, in particular polymers, can move easily between producers and downstream manufacturers.

Finally, Christian Holzleitner emphasized that the time is now to get ready for the post-2050 bioeconomy in which he envisages many products made using emissions from the production of food, fertilizers and livestock, along with a significant increase in the use of biomass.

RECYCLING PROCESSES & SCALING UP

As to what needs to happen next to ensure that alternative carbon sources are integrated into the economy, Gunter Pauli believes that there is a need to first demystify certain sectors, such as plastics. By acknowledging that plastics are merely monomers that have been made into polymers, envisaging a truly circular carbon economy suddenly becomes much easier. At the same time, he said, creating the right circular business models means designing models that are carbon neutral from inception.

When asked whether the concept of 'recycled carbon' sourced from fossil fuels would work in his vision of closing the loop, Mr. Pauli said that he is in favor of any functional product that can be made using recycled carbon. He noted that implementing a system that ensures multiple positive outputs and externalities should be a priority and said that the key to a successful circular economy will be a vertically integrated value chain, in which ideally sequestration can take place at each level. This idea of a vertical economy was also referenced by both Sirpa Pietikäinen and Christian Holzleitner, with the latter suggesting that this, if implemented with the same policy framework, could be more effective than the current Emissions Trading System.

The speakers from Unilever, Dow, and TNO were all keen to point out that the right technology is already available and the challenge is scaling it up; a sentiment that was also echoed by Gunter Pauli, who informed the audience that Novamont currently produces 30,000 tons of alcohol from sugar beets to make biodegradable plastics. Projects like this, he said, need to be replicated throughout Europe. For Peter Sandkühler, too many in Europe are still resisting the potential of chemical recycling as a complementary technology within a wider circular economy. At the same time, Sirpa Pietikäinen urged caution regarding the scaling-up of already existing technologies, given that not all are necessarily beneficial for the environment; citing bioenergy as a clear example of this. And while Jonathan Kleimark acknowledged that innovative and circular technologies already exist, in particular for chemical recycling and Carbon Capture and Utilization (CCU), he warned that they cannot simply be viewed as “silver bullets”, given the small-scale nature of projects involving such technologies.

Carbon Capture, Storage, and Utilization (CCS/U) was touched on by many of the speakers. Among the Unilever projects described by Florian Vernay was one in China, where the company is using carbon captured from a steel mill to manufacturing detergents. Ensuring that CCS becomes part of a circular economy, however, requires not only adequate capture and storage facilities, according to Christian Holzleitner, but also the right transport network to ensure that the carbon can be transported safely and effectively. In his opinion, until 2030, the EU Innovation Fund will be the main enabler of such infrastructure rollouts, however his hope is that the growing significance of carbon markets will ensure that private capital (with the help of some financial incentives) is also invested in such projects. Among the uses of such CCS, he cited bioenergy mixed with CCS as an example and said that the Commission is keen to engage with manufacturers to ensure that the right environment for innovation is established. For Sirpa Pietikäinen, the goal of CCS/U technologies should be collecting and utilizing the carbon that is already in the atmosphere and which should then be integrated

into closed recycling loops, while Martin Hojsík reminded all that storage methodologies and processes will be crucial to ensure that the carbon is not detrimental to the EU's Green Deal goals.

The problem with scaling up is one that had recently been addressed in a TNO study on agri-based chemicals, and Maxine Tillij outlined the three primary reasons for this: a lack of collaboration along the value chain, insufficient financing of circular business models (due partly to the fact that Europe's venture capital landscape is lagging behind its competitors), and a lack of enabling policies. All three will need to be addressed before a circular economy for chemicals can be achieved.

Upcoming EU legislation can go a long way to ensure an enabling environment, according to Florian Vernay, who identified both the Sustainable Products Initiative and the Sustainable by Design Criteria, (both expected in 2022) as great opportunities to lay down clear definitions for renewable and recycled carbon, and sustainable sourcing standards. Furthermore, he noted that the upcoming communication on Restoring Sustainable Carbon Cycles (14 December) can help define a clear methodology for what qualifies as sequestration and carbon sinks.

BIOECONOMY: CAN EUROPE BECOME A GLOBAL LEADER?

As the discussion began to wind down, Martin Hojsík asked the panel what they felt was missing from the EU legislative framework to allow the presented technologies and processes to be scaled-up.

For Florian Vernay, one of the key steps will be to ensure there are adequate market incentives for alternative feedstocks, highlighting that the past century has seen significant subsidies and the optimization of the means to produce fossil fuels, and as a result they have become much more affordable. Like all new technologies, he reminded the audience, the processes for making recycled and renewable carbon is expensive, and therefore the priority should be the employment of economic incentives and disincentives to transform the market dynamics as required. While Martin Hojsík agreed that such incentives could be useful, he also noted that it will be equally important to price in the externalities of chemical feedstocks to avoid the pitfalls of the past, and particularly to avoid a situation where we have a fossil fuel lock-in.

For Sirpa Pietikäinen, the crucial question for the Commission will be assessing whether they believe circular carbon can be a positive contributing factor to the circular economy as a whole, and whether they have the scientific evidence to back this up. From the Commission's perspective, Christian Holzleitner believes that achieving a circular carbon economy requires two things to happen in parallel: firstly ensuring an adequate quantity and quality of infrastructure, storage, and use facilities for carbon; and secondly, creating new value chains that are also sustainable. By ensuring this, Europe can guarantee that it has a high quality carbon market by 2050, one in which carbon effectively becomes a valuable commodity.

Gunter Pauli reminded all of the opportunities that an alternative carbon economy offers, citing the example of Italian farmers who are selling both their products and their waste to

manufacturers, thereby creating a whole new source of income. Something that is particularly important given that many believe the EU's current Common Agricultural Policy will not last indefinitely. Florian Vernay said he believes that CCS/U will be the staple of a low carbon economy, similar to how we view batteries and solar panels today, and therefore Europe should seize the opportunity to become a global leader in this field.